

Opportunity Title: USDA-ARS Molecular Biology Postdoctoral Fellowship in the Natural Products Utilization Research Unit

Opportunity Reference Code: USDA-ARS-SEA-2026-0280A

Organization U.S. Department of Agriculture (USDA)

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How to Apply *To submit your application, scroll to the bottom of this opportunity and click **APPLY**.*

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Click [here](#) for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations
- A copy of an abstract or reprint of an article

All documents must be in English or include an official English translation.

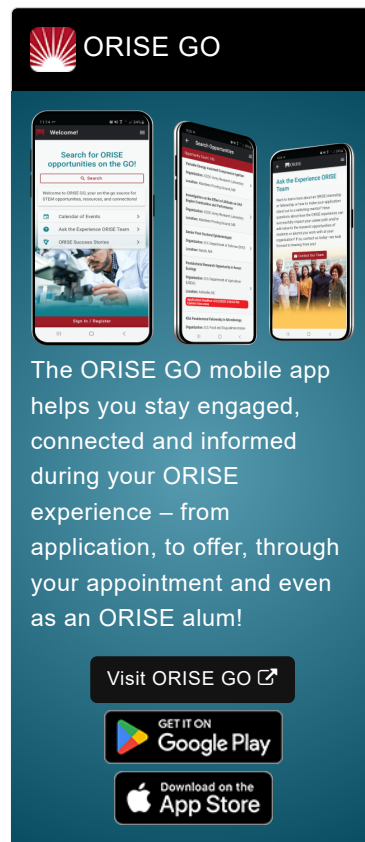
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Description *Applications are reviewed on a rolling-basis.

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Natural Products Utilization Research Unit located in Oxford, Mississippi.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: The Natural Products Utilization Research Unit develops natural products for use in agriculture, producing more toxicologically and environmentally benign pest management tools and improving the value of crops. A secondary mission is to conduct fundamental research to aid in the development of alternative crops to produce pharmaceuticals and botanical supplement active ingredients. This fellowship aims to improve crop protection from pests through the use of natural products, either by discovering safer natural pesticides or by manipulating their production in plants by genetic engineering or other



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means. You will use plant molecular biology to discover genes involved in the biosynthesis, transport, and metabolism of natural products with an emphasis on weed management and allelopathic interactions.

These directives require a multifaceted approach involving physiological, biochemical, and molecular experiments and the use of numerous techniques such as RNA-seq, data mining of DNA and protein sequence databases, analysis of gene function via CRISPR/Cas-9-mediated genome editing and RNAi, heterologous protein expression, real-time qRT-PCR, and plant transformation using species such as *Arabidopsis*, rice, tobacco, sorghum, corn and wheat. The information generated will, for example, dramatically increase current understanding of the biosynthesis and genetic regulation of allelochemicals and provide the tools necessary to manipulate these pathways *in planta* via genetic engineering.

Learning Objectives: Under the guidance of a mentor, you will:

- Learn about the development and application of natural products for sustainable agricultural pest management and crop improvement.
- Gain experience using plant molecular biology approaches to investigate genes involved in the biosynthesis, transport, and metabolism of natural products.
- Participate in research focused on weed management and allelopathic interactions to improve crop protection strategies.
- Apply physiological, biochemical, and molecular techniques including RNA-seq, sequence database mining, real-time qRT-PCR, heterologous protein expression, and plant transformation.
- Develop skills in functional genomics approaches such as CRISPR/Cas-9 genome editing and RNA interference (RNAi) to study gene function and pathway regulation.
- Learn how to handle multiple plant systems, including *Arabidopsis*, rice, tobacco, sorghum, corn, and wheat.
- Gain experience in research advancing the understanding of allelochemical biosynthesis and genetic regulation, with the goal of enabling pathway manipulation through genetic engineering.
- Gain experience in developing environmentally benign pest management tools and alternative crop applications for pharmaceuticals and botanical supplements.

Mentor(s): The mentor for this opportunity is

Charles Cantrell (charles.cantrell@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: September 1, 2026. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

Level of Participation: The appointment is full time.

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Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience. **The anticipated stipend range is \$60,000 - \$70,000 annually.**

Citizenship Requirements: This opportunity is available to U.S. citizens only.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process, please email ORISE.ARS.Southeast@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should be pursuing or has received a doctoral degree in the one of the relevant fields (e.g. Plant Molecular Biology or Plant Biochemistry).

Preferred skills:

- Experience in understanding biosynthetic pathways and genetically engineering crops to produce desired natural compounds.

Stipend \$60,000.00 – \$70,000.00 Yearly

Point of Contact [Sara Beth](#)

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Engineering** (2 )
 - **Life Health and Medical Sciences** (5 )
 - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).